

# LAW ENFORCEMENT MUTUAL AID PLAN (SAR) ANNEX



## MUTUAL AID GUIDELINES

### SEARCH & RESCUE UNDERGROUND

*June 2, 2005*

California Governor's Office of Emergency Services  
Law Enforcement Branch  
Search and Rescue Mutual Aid – Underground Guidelines

ACKNOWLEDGMENT

This document is the product of a cooperative effort of an assembled Underground Search & Rescue Specialist Working Group and the California's State Sheriff's Search and Rescue Coordinators.

The Governor's Office of Emergency Services gratefully acknowledges the valuable input and collective expertise from the following members of the Underground Search & Rescue Specialist Working Group:

John McKently, Volunteer – Group Chair Los Angeles County Sheriff/Montrose SAR SAR Commander	Dave Nicholson, Sergeant Siskiyou County Sheriff
Mark Kinsey, Volunteer San Bernardino Cave Rescue Team SAR Team Vice Commander	Amanda Mortimer, Volunteer National Cave Rescue Commission National Instructor
Mark Bowers, Volunteer National Cave Rescue Commission Regional Coordinator	Steve Hart, Principal Engineer Cal/OSHA Mining & Tunneling Unit
Sean Halpin, Volunteer Indian Wells Valley Search & Rescue SAR Team Captain	Chuck Christman, Volunteer Kern County SO/IWVSAR SAR Team Member
Clint Hiatt, Volunteer SBCSO/Barstow Desert Rescue Squad SAR Team Member	Dan Brennan, Volunteer Tuolumne County SAR SAR Team Leader
Bruce Parker Los Angeles County Sheriff/Montrose SAR Volunteer SAR Team Member	Art Fortini, Volunteer Los Angeles County Sheriff/Sierra Madre SAR SAR Team Member
Greg Francek, Volunteer Amador County SAR SAR Team Member	Jeff Lehman, Volunteer San Bernardino Cave Rescue Team SAR Team Commander

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### **Introduction**

Pursuant to the California Government Code, Chapter 7 of Division 1 of Title 2, “The Emergency Services Act”, the Governor’s Office of Emergency Services (OES), Law Enforcement Branch manages and maintains the State of California Search and Rescue Mutual Aid Program. This includes the publication of plans pertaining to search and rescue mutual aid. This publication, The California OES SAR Mutual Aid Plan, serves as an annex to the California OES Law Enforcement Mutual Aid Plan.

In order to refine the State’s Search and Rescue Mutual Aid Program, the OES Law Enforcement Branch assembled California’s 58 County Sheriffs’ Search and Rescue Coordinators, as well as California’s State and Federal SAR Cooperators. This group of interested agencies is called the “State Sheriffs’ Search and Rescue Coordinators”. The main objective of this group is to collectively review and address statewide SAR issues to improve the effectiveness and efficiency of the State’s SAR Mutual Aid Program.

One of the main issues identified was the existence of multiple and inconsistent standards that affect the SAR discipline, specifically mutual aid SAR responses. As such, the State standard of care was not clear, nor consistent for mutual aid SAR responses. This issue was addressed in detail by the State Sheriffs’ SAR Coordinators. Their objective was to create mutual aid guidelines that met or exceeded existing applicable standards while creating an effective and efficient statewide criteria for mutual aid SAR responses. As mutual aid guidelines, these are solely intended to define proficiencies of SAR mutual aid resources and not to create mandatory standards for SAR jurisdictional agencies in California.

The creation of California’s SAR Mutual Aid Guidelines encompass’ all potential SAR disciplines and are developed as follows:

1. The State Sheriffs’ SAR Coordinators identify the guideline discipline need.
2. The State Sheriffs’ SAR Coordinators elect one of their fellow coordinators to chair the guideline creation process.
3. The State Sheriffs’ SAR Coordinators identify and task a group of subject matter experts into a “Specialist Working Group”.
4. The Specialist Working Group creates the guidelines based upon their knowledge and experience and submits them back to the coordinators for review, recommendation, and/or approval.
5. Once approved by the coordinators, and reviewed by OES Administration and Staff Counsel, the coordinators present the guidelines to the California State Sheriffs’ Association (CSSA) for their review, recommendation and/or approval.
6. Once approved by CSSA, the guidelines become part of the OES California Law Enforcement Mutual Aid Plan – SAR Annex.

Effectiveness and efficiency is achieved as California’s SAR Mutual Aid Guidelines are created by California’s SAR experts, for California’s Sheriff’s SAR Coordinators, and approved by the Sheriffs of California, all for the benefit of those who become the subjects of search and/or rescue in California’s SAR environments.

The following guidelines include “typing” of both the SAR environment as well as the SAR resource. They are designed to match the conditions, environment and possible length of deployment (normal operational periods should be 12 hours) as determined by the mutual aid requestor and the minimum equipment, experience, and skill level the responding agency should consider when sending SAR personnel.

The goal of “typing” is to be able to identify the largest number of SAR resources while minimizing the risk of placing an unsuitable SAR resource in an unsafe situation. The responding agencies’ liaison or leader shall have final approval of any assignments their personnel are asked to perform.

To assure that all mutual aid SAR personnel are adequately insured in the event of injury or death, while on a mutual aid SAR mission, personnel should be properly registered as State Disaster Service Workers (DSW) or equivalent.

NOTE: The endeavor of Search and Rescue necessitates response into difficult and unpredictable circumstances in widely varied and many times hazardous terrain. These guidelines are intended to assist Search and Rescue Coordinators in identifying appropriate emergency response resources to effect searches and rescues in the most expeditious manner possible while considering known and unknown hazards. These guidelines are not intended to address all eventualities. Rather they are a set of tools derived from collective knowledge to address the task at hand. Search and Rescue is inherently dangerous and participants respond with knowledge of the associated risks.

It is the responsibility of agencies responding to California Search and Rescue Mutual Aid requests to provide qualified personnel and equipment that meet or exceed the recommended level of skills and capabilities stipulated in these guideline documents.

The California SAR Mutual Aid Guidelines are only minimum guidelines and circumstances that are unique to a particular search and rescue mission may dictate that additional or higher skills and qualifications may be necessary for the safety of the searcher and for successful search and rescue operations.

### **Summary**

Underground search & rescue team members are capable of conducting searches for people, clues and evidence or performing rescues in or from various cave, mine and tunnel situations. There are minimum equipment and skills requirements that personnel and teams must meet before entering or performing Underground SAR missions.

**When requesting mutual aid the SAR Coordinator should understand that the Underground environment is divided into two types-*NATURAL & MAN MADE*.**

To the untrained person they are all dark dirty holes in the ground but the personnel, training, equipment and legal requirements are vastly different for each. For Mutual Aid request purposes the following definitions apply:

- Caves are created naturally and are unregulated.
- Mines and tunnels are man-made and, depending upon conditions, are regulated by state or federal law.
- Mines referred to are underground mines and not surface mines or quarries.

**MINE & TUNNEL RESCUE GUIDELINES**

The following is a general description of three different *man-made* underground environment 'types' (conditions, environment and hazards) and suggested minimum abilities for team operating within each area type.

Search Environment Type		
Type 1 Inactive or Abandoned Mines	Type 2 Active Mines	Type 3 Tunnels

Recommended Capabilities and Skills			
	Type 1	Type 2	Type 3
<b>Team Equipment and Training Requirements</b>	MSHA Regulations for minimum equipment and training plus additional technical rope, searching, and timbering/shoring skills	Meet MSHA Regulations for equipment and training	Meet California Division of Occupational Safety and Health Regulations for equipment and training
<b>Can be deployed to Environment Type</b>	<b>1/2/3</b>	<b>2/3</b>	<b>3</b>
<b>Personnel Training</b>	Same as Type 2 plus proficiency in the selection and set up of rescue anchors. Ability to construct & operate simple and compound mechanical advantage systems, belay systems and lowering systems. Proficiency in technical litter evacuations in a vertical environment	Mandated training on Breathing apparatus, self rescuers, firefighting, mapping, ventilation, etc.	Same as Type 2
<b>Rigging Equipment</b>	Adequate supply of rope and hardware to build systems described above		
<b>Personnel Equipment</b>	Same as Type 2 plus harness & personal rope equipment	Head protection compatible with cap lamps, gloves, flame protective outerwear, footwear appropriate for the environment.	Same as Type 2
<b>Knowledge of Basic SEMS/ICS</b>	Member should be familiar with the "Standardized Emergency Management System/ICS."	Same as Type 1	Same as Type 1
<b>Fitness</b>	Fitness appropriate for conditions, terrain and missions	Same as Type 1	Same as Type 1
<b>Medical Skills</b>	Minimum of Current First Aid/CPR	Same as Type 1	Same as Type 1

<b>Communications</b>	Basic radio communications skills, including use of mutual aid radio frequencies. Specialized communications equipment as required by regulations	Same as Type 1	Same as Type 1
<b>Hazardous Materials</b>	Hazardous Materials Awareness Training	Same as Type 1	Same as Type 1
<b>Field Interview Skills Information Handling</b>	Member should be familiar with the handling of sensitive information and basic interview skills when dealing with witnesses and the public.	Same as Type 1	Same as Type 1
<b>Crime Scene Protection</b>	Member should be familiar with basic crime scene protection, chain of evidence and documentation.	Same as Type 1	Same as Type 1
<b>Helicopter Operations</b>	Basic Helicopter Safety. Knowledge and familiarity with Loading/Unloading- both hot and cold, ability to help establish landing site, Knowledge of short haul and/or hoist operations.	Same as Type 1	Same as Type 1
<b>Transportation</b>	Transportation for all personnel and equipment to site	Same as Type 1	Same as Type 1

Notes on Minimum Required Training and Equipment:

MSHA Regulations covering Mine Rescue Teams, Membership, Training and Equipment are found in Title 30, Code of Federal Regulations §49.6, 49.7 & 49.8.

California Regulations covering Mine Rescue Teams, Training and Equipment are found in the California Code of Regulations, Title 8, Section 7084, 7085 & 7086.  
Tunnel Safety Orders are covered in §8430.

## CAVE RESCUE GUIDELINES

The following is a general description of three different *NATURAL* underground environment 'types' (conditions, environment and hazards) and suggested minimum abilities for team operating within each area type.

SEARCH ENVIRONMENT TYPE		
<b>Type 1</b> Any cave rescue where rescuers head must be completely submerged underwater.	<b>Type 2</b> Any cave rescue where rescuers head is not completely submerged underwater and slope is more than 40 degrees inside the cave.	<b>Type 3</b> Any cave rescue where rescuers head is not completely submerged underwater and slope is less than 40 degrees inside the cave.

Recommended Capabilities and Skills			
	Type 1	Type 2	Type 3
<b>Medical</b>	Current First Aid / CPR 1 <sup>st</sup> Responder or above recommended	Current First Aid / CPR	Current First Aid / CPR
<b>Communications</b>	Same as Type 3, plus knowledge of specific specialized systems.	Same as Type 3	Familiar with communications issues associated with the cave environment, in addition to basic Radio communication skills.
<b>Knowledge of basic ICS</b>	ICS I-100	ICS I-100	ICS I-100
<b>Navigation</b>	Same as Type 3	Same as Type 3	Able to read a cave map, locate position in a cave, determine and communicate position. Also, navigate point to point, GPS and map/compass, route finding.
<b>Fitness</b>	Same as Type 3	Same as Type 3	Fitness appropriate for conditions, terrain and mission.
<b>Helicopter Operations</b>	Basic Helicopter Safety. Knowledge and familiarity with Loading/Unloading-both hot and cold, ability to help establish landing site, Knowledge of short haul and/or hoist operations	Basic Helicopter Safety. Knowledge and familiarity with Loading/Unloading-both hot and cold, ability to help establish landing site, Knowledge of short haul and/or hoist operations	Basic Helicopter Safety. Knowledge and familiarity with Loading/Unloading-both hot and cold, ability to help establish landing site, Knowledge of short haul and/or hoist operations
<b>Rope Skills</b>	See appendix #1	See appendix #1	See appendix #1
<b>Caving Skills</b>	See appendix #2	See appendix #2	See appendix #2
<b>Crime Scene Protection</b>	Same as Type 3	Same as Type 3	Familiarity with basic crime scene protection, chain of evidence and documentation.
<b>Hazardous Materials</b>	Hazardous Materials Awareness Training	Hazardous Materials Awareness Training	Hazardous Materials Awareness Training

<b>Cave Diving Skills</b>	Current certification from International Underwater Cave Rescue and Recovery (IUCRR)	N/A	N/A
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## Appendix #1 Rope Rescue Training Requirement

Numbers in “Type” boxes indicate the minimum number of team members with indicated skills.

<b>Skill</b>	<b>Type I</b>	<b>Type II</b>	<b>Type III</b>
Knowledge of knots to be used	All	All	All
Construction and use of belay systems	2	2	1
Construction and use of mechanical advantage systems	2	2	1
Construction and use of lowering systems	2	2	1
Construction of a raising system	2	2	1
Ability to pass knots through systems	2	2	1
Proficient use of anchors in a cave environment	2	2	1
Proper use of edge protection	All	All	2
Rappel and rope ascension techniques	All	All	All
Understanding of loads generated by a system and the resulting static and dynamic stresses on equipment and anchors	2	2	NA
Procedures for assuring safety during all rescue operations	2	2	2
Proper procedures for patient packaging	2	2	1
First Responder certification or higher	2	2	1
Able to pass a knot on rappel or while ascending	All	All	NA
Able to change over from rappel to ascend and from ascending to rappel on rope	All	All	NA
Picking a patient off rope while on the same or another rope	2	2	NA
Personal seat harness and vertical gear capable of ascending and descending ropes.	All	All	NA

## **Appendix #2**

### **General Cave Rescuer Skills and Equipment**

Because of the unique nature of cave rescue, it is recommended that all rescuers have the following skills and personal equipment:

1. **Climbing Helmet.** UIAA or CE approved mountaineering style helmet with a three or four point suspension, and a quick release, non-elastic chinstrap.
2. **Three sources of light.** All must be capable of allowing the rescuer to exit the cave. At least two lights should be electric and two should be helmet mountable.
3. **Boots.** Sturdy, rubber soled.
4. **Rugged clothing.** Must be appropriate for the anticipated cave environment.
5. **Gloves.** Must have leather palms and full fingers.
6. **Water bottles.** Two quarts recommended.
7. **Small, personal first aid kit.** Optional, but highly recommended.
8. **Small, heavy-duty pack.** Used to carry personal gear underground.

There exist certain situations where additional equipment may be required to perform a rescue. It is not the intent of this document to list all possible additional equipment that may be needed; instead, a list of some of the more frequently used equipment is given below. Resources and equipment not listed here may be required to perform some rescues.

1. Wet suits.
2. Stemples
3. Air monitoring devices to check for “bad air”.
4. Technical bolting devices and equipment.
5. Excavation equipment.
6. Extended stay camping equipment for inside the cave.

Because of the unique nature of cave rescue, it is recommended that all rescuers on a cave rescue team receive a minimum of 16 hours of nationally recognized specialized cave rescue training. It is also recommended that at least one member of each team obtain a minimum of 70 hours of nationally recognized specialized cave rescue training every 4 years. All members of a cave rescue team should spend at least 8 hours traveling inside a wild cave (not a tourist trail) every 6 months.